REMARKS

This is in response to the Office Action mailed July 31, 2003. Claims 1-13 have been amended. Claims 1-13 are currently pending and at issue.

Claim 1 has been amended to specify the following: in step b), the pulp is pressed "to remove water;" in step e), "the cooked pulp is hydrolyzed to form microcrystalline cellulose without the use of any mineral acids;" and after step i), there is a final step directed to the recovery of microcrystalline cellulose. Support for the above amendments to claim 1 is found in the specification at, for example, page 2, lines 7-9 and 14-16; page 7, lines 27-29; page 8, lines 19-24; and page 9, lines 8-9. Claim 1 has also been amended to remove the reference to "depressurisation." Support for this amendment is found in the specification at page 10, lines 10-12.

Claims 1 and 5 have been amended to correct the spelling of the term "polymerization." Claim 12 has been amended to correct the spelling of the term "homogenization."

Claim 11 has been amended to replace the trademark term "DEQUEST" with its chemical name --diethylenetriamine penta(methylenephosphonic acid)--.

No new matter has been added. Reconsideration of the application is respectfully requested.

Objection to the Specification

The Examiner states that the specification should include a cross-reference to related applications. Pursuant to 37 C.F.R. 1.78, the specification has been amended to reference U.S. Provisional Application No. 60/245,148 filed November 3, 2000, of which the present application claims the benefit under 35 U.S.C. § 119(b).

Objections to the Claims

Claims 4-13 have been objected to as being in improper form under 37 C.F.R. 1.75(c). Claims 4-13 have been amended to be singly dependent. Therefore, these claims are in proper form. Applicants respectfully request that the Examiner consider the merits of claims 4-13.

The Examiner has objected to the starting term of claims 2-13. Accordingly, claims 2-13 have been amended to begin with the term "The" rather than --A--, as suggested by the Examiner.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 1-13 have been rejected under 35 U.S.C. § 112, first paragraph, as non-enabling because claim 1 does not recite a critical feature, namely that the cooked pulp is hydrolyzed to form microcrystalline cellulose without the use of any mineral acids. Claim 1 has been amended such that step e) recites, "and wherein the cooked pulp is

hydrolyzed to form microcrystalline cellulose without the use of any mineral acids." Therefore, this rejection should be withdrawn.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-13 have been rejected under 35 U.S.C. § 112, second paragraph, as indefinite. The Examiner states that claim 1 is incomplete because it does not recite the step of recovering the microcrystalline cellulose or that the purpose of step (b) is to remove water.

Claim 1 has been amended to specify each of these features. Support for this amendment is found in the specification at, for example, page 2, lines 14-16 and page 7, lines 27-29. Therefore, these rejections should be withdrawn.

The Examiner has rejected claims 1 and 5 as indefinite, and requests that the terms "polymerization" and "depressurizing" be spelled correctly. Claims 1 and 5 have been amended to correct the spelling of the term "polymerization." The term "depressurising" has been removed from claim 1. Therefore, this rejection should be withdrawn.

Claim 11 has been rejected for including a trademark term, "DEQUEST." Claim 11 has been amended to replace the term "DEQUEST" with its chemical name, --diethylenetriamine penta(methylenephosphonic acid)--. Attached herewith as Exhibit A is a printout from www.dequest.com, disclosing the chemical name of DEQUEST.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-3 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Toshkov et al. (U.S. Patent No. 3,954,727) ("Toshkov") in view of Jollez et al. (WO 99/60027) ("Jollez") and further in view of Nimz et al. (U.S. Patent No. 5,074,960) ("Nimz"). The Examiner cites Toshkov as disclosing a process of preparing microcrystalline cellulose according to claim 1 with the exception of the repulping, pressing, and decompaction steps recited in steps a)-c). The Examiner acknowledges that Toshkov is silent with respect to these three steps. Jollez is cited by the Examiner as disclosing a process of making high purity microcrystalline cellulose, including the steps of preparing a pulp by repulping, filtration, and trituration prior to cooking the pulp in a reactor. The Examiner cites Nimz as disclosing a method of preparing alpha-cellulose including the steps of pressing and fluffing the pulp prior to reaction. According to the Examiner, it would have been obvious to modify the process of Toshkov in view of Jollez and Nimz to produce the presently claimed process for preparing microcrystalline cellulose.

The rejection is respectfully traversed, and reconsideration is requested.

Claim 1 is not obvious over Toshkov in view of Jollez and Nimz for the following reasons: (1) none of the cited references teaches or suggests the step of cooling cooked pulp in a reactor by injecting water into the reactor, as called for in step f); (2) Toshkov teaches away from a process conducted without the use of any mineral acids, as called

for in step e); and (3) Nimz does not teach or suggest the application of its process to the preparation of microcrystalline cellulose, as called for in step j).

First, Toshkov and Nimz do not teach or suggest the step of cooling cooked pulp in a reactor by injecting water into the reactor, as called for in the present claims. Toshkov discloses a process wherein the pulp is heated in an autoclave and "afterwards the mass is cooled" (Toshkov: col. 2, lines 36-38, 52-54). There is no disclosure in Toshkov that teaches or suggests the step of cooling the mass by directly injecting water into the autoclave, as recited in step f) of claim 1. Rather, it is more likely that a person of ordinary skill would understand Toshkov's disclosure to indicate that the autoclave is both heated and cooled in the same manner, by the standard method of heating and cooling liquids in the jacket of the autoclave. Without any contrary teachings in Toshkov, there is no disclosure that would have motivated a person of ordinary skill to cool the reactor contents by injecting water directly into the reactor.

Jollez discloses a process of producing microcrystalline cellulose by subjecting pulp to a "steam explosion treatment" (Jollez: p. 6, lines 3-4), which injects steam directly into the reactor (Jollez: p. 8, line 12). At the end of the steam explosion, a shearing force is applied causing instant "violent vaporization" of water induced by instant depressurization and a sudden flow of the pulp out of the reactor (Jollez: p. 8, line 28 to p. 9, line 3). There is no disclosure in Jollez that would have motivated a person of ordinary skill to add water to the reactor, as presently recited in step f) of

claim 1. In fact, the step of injecting water directly into the reactor would be contrary to the teachings of Jollez because Jollez relies upon violent vaporization of water.

Nimz is directed to a method of removing lignin from a cellulosic pulp material (Nimz: col. 2, lines 36-43) and does not provide any information on how to cool down cooked pulp in a reactor.

Second, Toshkov teaches away from a process conducted without the use of any mineral acids, as called for in the present claims. An essential feature of Toshkov is its use of acids to hydrolyze and chemically deaggregate cellulose. Specifically, Toshkov highlights its use of sulfuric acid in its process is as a noteworthy advantage (Toshkov: col. 2, lines 15-22). Furthermore, all of the examples in Toshkov disclose the use of a 1% solution of sulfuric acid (Toshkov: col. 2, lines 28, 43). In contrast, step e) of claim 1 recites that "the cooked pulp is hydrolyzed to form microcrystalline cellulose without the use of any mineral acids." Thus, Toshkov would be more likely to discourage a person of ordinary skill in the art from developing a process that specifically did not use any mineral acids. *See Gillette Co. v. S.C. Johnson & Son, Inc.*, 919 F.2d 720 (Fed. Cir. 1990) (finding non-obviousness where "[t]he closest prior art reference 'would likely *discourage* the art worker from attempting the substitution suggested by [the inventor/patentee]'").

Third, Nimz does not teach or suggest the application of its process to the preparation of microcrystalline cellulose, as called for in the present claims. Nimz is directed to a method of removing lignin from a cellulosic pulp material and is not related

to the preparation of microcrystalline cellulose. In fact, Nimz involves the removal of lignin from pulp fibers, and states that an object of its invention is to provide a method that does not cause "detrimental changes of the pulp fibers" (Nimz: col. 2, lines 44-46). Consequently, a person of ordinary skill in the art would not have been motivated to apply the teachings of Nimz to a process for preparing microcrystalline cellulose, a product obtained by depolymerization of cellulosic fibers down to their constitutive microcrystals (see Jollez: p. 1, lines 13-14).

Therefore, in view of the above, Toshkov, Jollez, and Nimz cannot be relied upon to reject claims 1-3, or any of their dependent claims, as obvious. Accordingly, this rejection should be withdrawn.

Conclusion

In view of the above amendments and remarks, it is respectfully requested that the application be reconsidered and all pending claims be allowed and the case passed to issue.

If there are any other issues remaining, which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Respectfully submitted,

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